DIGESTIVE WORKSHEET

Digestive System and Body Metabolism

1. Hormonal stimuli are important in digestive activities that occur in the stomach and small intestine. Using the key choices, identify the hormones that function as described in the following statements. Insert the correct term or letter response in the answer blanks.

KEY CHOICES:

A. Cholecystokinin **B.** Gastrin **C.** Secretin

_____ , _____ **1.** These two hormones stimulate the pancreas to release its secretions.

_____ **2.** This hormone stimulates increased production of gastric juice.

_____ **3.** This hormone causes the gallbladder to release stored bile.

_____ **4.** This hormone causes the liver to increase its output of bile.

2. Various types of foods are ingested in the diet and broken down to their building blocks. Use the key choices to complete the following statements according to these understandings. Insert the correct letter(s) in the answer blanks. In most cases, more than one choice applies.

KEY CHOICES:

A. Amino acids **E.** Fatty acids **H.** Glucose **K.** Meat/fish

B. Bread/pasta **F.** Fructose **I.** Lactose **L.** Starch

C. Cheese/cream **G.** Galactose **J.** Maltose **M.** Sucrose

D. Cellulose

_____ , _____ **1.** Examples of carbohydrate foods in the diet.

_____ , _____ , _____ **2.** The building blocks of carbohydrates are monosaccharides, or simple sugars. The three common simple sugars in our diet are ___, ___, and ___.

_____ **3.** Of the simple sugars, ___ is most important because it is the sugar referred to as "blood sugar."

_____ , _____ , _____ **4.** Disaccharides include ___, ___, and ___.

_____ **5.** The only important *digestible* polysaccharide is ___.

_____ **6.** An indigestible polysaccharide that aids elimination because it adds bulk to the diet is ___.

_____ , _____ **7.** Protein-rich foods include ___ and ___.

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Digestive System Function: Food Movement, Breakdown, and Absorption

_____ **8.** Protein foods must be digested to ___ before they can be absorbed.

_____ **9.** Fatty foods ingested in the normal diet include ___.

_____ **10.** Fats are broken down to two types of building blocks, ___ and glycerol.

3. Dietary substances capable of being absorbed are listed next. If the substance is *most often* absorbed from the digestive tract by active transport processes, put an *A* in the blank. If it is usually absorbed passively (by diffusion or osmosis), put a *P* in the blank. In addition, circle the substance that is *most likely* to be absorbed into a lacteal rather than into the capillary bed of the villus.

____ **1.** Water

____ **2.** Amino acids

____ **3.** Simple sugars

____ **4.** Fatty acids

____ **5.** Electrolytes

Digestive System and Body Metabolism

Metabolism

4. Using the key choices, identify the foodstuffs used by cells in the cellular functions described below. Insert the correct term or key letter in the answer blanks.

KEY CHOICES:

A. Amino acids **B.** Carbohydrates **C.** Fats

_____ **1.** The most used substance for producing the energy-rich ATP

_____ **2.** Important in building myelin sheaths and cell membranes

_____ **3.** Tend to be conserved by cells

_____ **4.** The second most important food source for making cellular energy.

_____ **5.** Form insulating deposits around body organs and beneath the skin

_____ **6.** Used to make the bulk of cell structure and functional substances such as enzymes

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5. This section considers the process of cellular respiration. Insert the correct *word(s)* from the key choices in the answer blanks.

KEY CHOICES:

A. ATP	**G.** Basal metabolic rate (BMR)	**M.** Ketosis
B. Acetic acid	**H.** Carbon dioxide	**N.** Monosaccharides
C. Acetoacetic acid	**I.** Essential	**O.** Oxygen
D. Acetone	**J.** Fatty acids	**P.** Total metabolic rate (TMR)
E. Amino acids	**K.** Glucose	**Q.** Urea
F. Ammonia	**L.** Glycogen	**R.** Water

_____ **1.**
_____ **2.**
_____ **3.**
_____ **4.**
_____ **5.**
_____ **6.**
_____ **7.**
_____ **8.**
_____ **9.**
_____ **10.**
_____ **11.**
_____ **12.**

The key "fuel" used by body cells is **(1)**. The cells break this fuel molecule apart piece by piece. The hydrogen removed is combined with **(2)** to form **(3)**, while its carbon leaves the body in the form of **(4)** gas. The importance of this process is that it provides **(5)**, a form of energy that the cells can use to power all their activities. For carbohydrates to be oxidized, or burned for energy, they must first be broken down to **(6)**. When carbohydrates are unavailable to prime the metabolic pump, intermediate products of fat metabolism such as **(7)** and **(8)** accumulate in the blood, causing **(9)** and low blood pH. Amino acids are actively accumulated by cells because protein cannot be made unless all amino acid types are present. The amino acids that *must* be taken in the diet are called **(10)** amino acids. When amino acids are oxidized to form cellular energy, their amino groups are removed and liberated as **(11)**. In the liver, this is combined with carbon dioxide to form **(12)**, which is removed from the body by the kidneys.

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PHYSIOLOGY OF THE DIGESTIVE SYSTEM

6. Match the descriptions in Column B with the appropriate terms referring to digestive processes in Column A.

Column A	Column B
_____ 1. Ingestion	A. Transport of nutrients from lumen to blood
_____ 2. Propulsion	B. Enzymatic breakdown
_____ 3. Mechanical digestion	C. Elimination of feces
_____ 4. Chemical digestion	D. Eating
_____ 5. Absorption	E. Chewing
_____ 6. Defecation	F. Churning
	G. Includes swallowing
	H. Segmentation and peristalsis

7. This section relates to food breakdown in the digestive tract. Using the key choices, select the appropriate terms to complete the following statements. Insert the correct letter or term in the answer blanks.

Key Choices

A. Bicarbonate-rich fluid	F. HCl	K. Mucus
B. Bile	G. Hormonal stimulus	L. Pepsin
C. Brush border enzymes	H. Lipases	M. Psychological stimulus
D. Chewing	I. Mechanical stimulus	N. Rennin
E. Churning	J. Mouth	O. Salivary amylase

_____ 1. Starch digestion begins in the mouth when (1) is ducted in by the salivary glands.

_____ 2. Gastrin, which prods the stomach glands to produce more enzymes and HCl, represents a (2).

_____ 3. The fact that the mere thought of a relished food can make your mouth water is an example of (3).

_____ 4. Many people chew gum to increase saliva formation when their mouths are dry. This type of stimulus is a (4).

_____ 5. Protein foods are largely acted on in the stomach by (5).

_____ 6. For the stomach protein-digesting enzymes to become active, __(6)__ is needed.

_____ 7. Considering living cells of the stomach (and everywhere) are largely protein, it is amazing that they are not digested by the activity of stomach enzymes. The most important means of stomach protection is the __(7)__ it produces.

_____ 8. A milk protein–digesting enzyme found in children but uncommon in adults is __(8)__.

_____ 9. The third layer of smooth muscle found in the stomach wall allows mixing and mechanical breakdown by __(9)__.

_____ 10. Important intestinal enzymes are the __(10)__.

_____ 11. The small intestine is protected from the corrosive action of hydrochloric acid in chyme by __(11)__, which is ducted in by the pancreas.

_____ 12. The pancreas produces protein-digesting enzymes, amylase, and nucleases. It is the only important source of __(12)__.

_____ 13. A nonenzyme substance that causes fat to be dispersed into smaller globules is __(13)__.

8. Identify the nutrients described by using the key choices. Insert the correct letter(s) in the answer blanks.

Key Choices

A. Bread/pasta	D. Fruits	G. Starch
B. Cheese/cream	E. Meat/fish	H. Vegetables
C. Cellulose	F. Minerals	I. Vitamins

_____ 1. Examples of *carbohydrate-rich foods* in the diet.

_____ 2. Fatty foods ingested in the normal diet include _____.

_____ 3. The only important *digestible* polysaccharide.

_____ 4. An *indigestible* polysaccharide that aids elimination because it adds bulk to the diet is _____.

_____ 5. *Protein-rich foods* include _____ and _____.

_____ 6. Most examples of these nutrients, which are found largely in vegetables and fruits, are used as coenzymes.

_____ 7. Include copper, iron, and sodium.